

IN THE CLAIMS

1    1. A programming circuit for controlling a control circuit of a voltage generator  
2    system, wherein the programming circuit comprises:  
3                means for receiving at least one input control signal;  
4                means for processing the at least one input control signal using at least a  
5    series of bias stages;  
6                means for generating at least one output control signal using at least a  
7    signal outputted by the series of bias stages; and  
8                means for outputting the at least one output control signal to the control  
9    circuit of the voltage generator system for controlling the control circuit in accordance  
10   with the at least one input control signal.

1    2. The programming circuit according to claim 1, wherein the control circuit  
2    of the voltage generator system includes a limiter circuit and an oscillator circuit, and the  
3    output control signal controls at least one of the limiter circuit and the oscillator circuit.

1    3. The programming circuit according to claim 1, wherein a first input  
2    control signal of the at least one input control signal is configured for generating a first  
3    output control signal of the at least one output control signal for controlling the limiter  
4    circuit of the control circuit and a second input control signal of the at least one input  
5    control signal is configured for generating a second output control signal of the at least  
6    one output control signal for controlling an oscillator circuit of the control circuit.

1       4. The programming circuit according to claim 3, wherein the means for  
2 processing the at least one input control signal includes a first means for processing the  
first input control signal and a second means for processing the second input control  
signal.

3       5. The programming circuit according to claim 4, wherein the first output  
control signal is output by the first means for processing, and the second output control  
signal is output by the second means for processing.

4       6. The programming circuit according to claim 3, wherein the first input  
control signal is configured for indicating a target output voltage for the voltage generator  
system.

5       7. The programming circuit according to claim 6, wherein the limiter circuit  
includes circuitry for determining when the output voltage of the voltage generator  
system has reached the target output voltage indicated by the input signal, and upon a  
positive determination, the circuitry sends a third output control signal to the oscillator  
circuit to disable the oscillator circuit.

6       8. The programming circuit according to claim 7, wherein upon the positive  
determination, the circuitry sends the third output control signal to a charge pump of the  
voltage generator system to disable the charge pump.

1        9.      The programming circuit according to claim 3, wherein the second input  
2      control signal is configured for indicating a pumping speed for the oscillator circuit.

1        10.     The programming circuit according to claim 1, wherein the means for  
2      processing the at least one input control signal include means for converting each of the  
3      at least one input control signal into at least one binary signal, and means for providing a  
4      portion of the at least one binary signal to a bias stage of the series of bias stages for  
5      producing current bias of the at least one binary signal by a predetermined current bias.

1        11.     The programming circuit according to claim 1, wherein the means for  
2      processing the at least one input control signal processes a coarse component signal and a  
3      fine component signal of the at least one input control signal.

1        12.     The programming circuit according to claim 1, wherein the at least one  
2      input control signal is received from a processor.

1        13.     The programming circuit according to claim 12, wherein the processor is a  
2      Built-In-Self Test (BIST) unit for testing the voltage generator system.

1        14.     The programming circuit according to claim 7, wherein the first output  
2      control signal is provided to a gate of a MOS transistor functioning as a current bias of  
3      the limiter circuit, and the third output control signal is output from a comparator  
4      comparing a voltage level of a Voltage Reference signal and a voltage level of a voltage

1 generated from a node of a resistor chain through which a current produced by the current  
2 bias passes.

1 15. The programming circuit according to claim 10, wherein the  
2 predetermined current bias of each bias stage of the series of bias stages is the product of  
3 a constant and two raised to a predetermined power.

1 16. A programmable DC voltage generator system having at least one voltage  
2 generator system, said at least one voltage generator system comprising:  
3 means for receiving at least one input control signal;  
4 means for processing the at least one input control signal using at least a  
5 series of bias stages;  
6 means for generating at least one output control signal using at least a  
7 signal outputted by the series of bias stages; and  
8 means for outputting the at least one output control signal to the control  
9 circuit of the voltage generator system for controlling the control circuit in accordance  
10 with the at least one input control signal.

1 17. The system according to claim 16, wherein the control circuit of the  
2 voltage generator system includes a limiter circuit and an oscillator circuit, and the output  
3 control signal controls at least one of the limiter circuit and the oscillator circuit.

1       18. The system according to claim 16, wherein a first input control signal of  
2 the at least one input control signal is configured for generating a first output control  
3 signal of the at least one output control signal for controlling the limiter circuit of the  
4 control circuit and a second input control signal of the at least one input control signal is  
5 configured for generating a second output control signal of the at least one output control  
6 signal for controlling an oscillator circuit of the control circuit.

1       19. The system according to claim 18, wherein the means for processing the at  
2 least one input control signal includes a first means for processing the first input control  
3 signal and a second means for processing the second input control signal.

1       20. The system according to claim 19, wherein the first output control signal  
2 is output by the first means for processing, and the second output control signal is output  
3 by the second means for processing.

1       21. The system according to claim 18, wherein the first input control signal is  
2 configured for indicating a target output voltage for the voltage generator system.

1       22. The system according to claim 21, wherein the limiter circuit includes  
2 circuitry for determining when the output voltage of the voltage generator system has  
3 reached the target output voltage indicated by the input signal, and upon a positive

1 determination, the circuitry sends the signal to the oscillator circuit to disable the  
2 oscillator circuit.

1       23. The system according to claim 22, wherein upon the positive  
2 determination, the circuitry sends the signal to a charge pump of the voltage generator  
3 system to disable the charge pump.

1       24. The system according to claim 18, wherein the second input control signal  
2 is configured for indicating a pumping speed for the oscillator circuit.

1       25. The system according to claim 16, wherein the means for processing the at  
2 least one input control signal include means for converting the at least one input control  
3 signal into at least one binary signal, and means for providing a portion of the at least one  
4 binary signal to a bias stage of the series of bias stages for producing current bias of the at  
5 least one binary signal by a predetermined current bias.

1       26. The system according to claim 16, wherein the means for processing the at  
2 least one input control signal processes a coarse component signal and a fine component  
3 signal of the at least one input control signal.

1       27. The system according to claim 16, wherein the at least one input control  
2 signal is received from a processor.

1        28. The system according to claim 27, wherein the processor is a Built-In-Self  
2        Test (BIST) unit for testing the voltage generator system.

1        29. A programming circuit for controlling a control circuit of a voltage  
2        generator system, wherein the programming circuit comprises:  
3                means for receiving an input control signal having a value selectable from  
4                a range of values, wherein the input control signal is generated external to the voltage  
5                generator system;  
6                means for processing the input control signal; and  
7                means for generating an output control signal to the control circuit of the  
8                voltage generator system for controlling the control circuit in accordance with the input  
9                control signal.

1        30. The programming circuit according to claim 29, wherein the means for  
2        processing the input control signal includes a series of bias stages.

1        31. The programming circuit according to claim 29, wherein the input control  
2        signal is configured for indicating at least one of a target output voltage for the voltage  
3        generator system and a pumping speed for the oscillator circuit.

1        32. The programming circuit according to claim 31, wherein the control  
2        circuit of the voltage generator system includes a limiter circuit and an oscillator circuit,  
3        and the output control signal controls at least one of the limiter circuit for disabling the

- 1 oscillator circuit upon reaching the target output voltage, and the oscillator circuit for
- 2 controlling the pumping speed of the oscillator circuit.

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33. The programming circuit according to Claim 29, wherein the voltage generator system outputs at least one output voltage having a varying voltage level in accordance with the input control signal, for use in different operational modes and test modes.

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